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Regional Integration and Commodity Tax Harmonization

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In general, efficiency losses from regional tax diversity do not appear to be great enough to make a strong case for regional tax uniformity.



Summary findings

In a closed economy, a commodity tax drives a wedge between the producer price and the consumer price. In open economies, intercountry differences in commodity taxation can induce two additional distortions:

- Cross-country differences in consumer marginal rates of substitution (which result in an inefficient allocation of world consumption), which arise when countries levy taxes on goods and services consumed within their borders (the *destination principle*).
- Cross-country differences in producer marginal rates of transformation (resulting in an inefficient allocation of world production), which arise when countries levy taxes on goods and services produced within their borders (the *origins principle*).

Such distortions can be avoided by harmonizing tax rates, ensuring efficiency regardless of the tax principle adopted. At least, that is the theoretical rationale for international tax harmonization.

Regionally such harmonization can be justified, because equalities between marginal rates of substitution and transformation exist between economically integrated countries. Removing barriers to trade and factor movement exposes the allocation of resources more directly to tax rate differentials.

But gains in production and consumption efficiency derived from regional harmonization are not great. Moreover, by reducing international distortions,

harmonization could increase internal distortions and reduce welfare, if the new tax structure is inefficient and does not meet the country's preferences.

Tax rate uniformity does not appear to be the right way to maximize welfare if integrating countries are different. Some flexibility should be maintained. And apart from the misallocation of resources, tax rate diversity can induce strategic behavior.

A country's choice of tax rate can be influenced by the choices of others. Countries can race to cut rates to attract foreign consumers or producers — or if they have market power, they can increase taxes on imported goods and decrease them on exports. So, externalities arise: the “usurpation of the tax base” (in the first example) or the “export of the tax burden” (in the second).

Competition between countries would then lead to Nash equilibria in the tax-rate-setting game, resulting in a welfare level inferior to that attainable by cooperation. In fact, there is some evidence that revenue effects might be large for small countries, where the tax structure is often used as a protective device.

If both harmonization and competition can produce welfare losses, one solution could be coordination measures aimed at reducing exploitation of other member countries through taxation.

This paper — a product of the Development Research Group — is part of background work for the group's program on regionalism and development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room N5-060, telephone 202-473-7947, fax 202-522-1159, Internet address trade@worldbank.org. November 1997. (39 pages)

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REGIONAL INTEGRATION AND COMMODITY TAX HARMONIZATION

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Foreword

As regional trading arrangements (RTAs) have spread, enlarged and deepened over the last decade, they have posed challenges to economists on both intellectual and policy levels. On the former, do RTAs stimulate growth and investment, facilitate technology transfer, shift comparative advantage towards high value-added activities, provide credibility to reform programs, or induce political stability and cooperation? Or do they, on the other hand, divert trade in inefficient directions and undermine the multilateral trading system?

The answer is probably “all of these things, in different proportions according to the particular circumstances of each RTA.” This then poses the policy challenge of how best to manage RTAs in order to get the best balance of benefits and costs. For example, should technical standards be harmonized and, if so, how; do direct or indirect taxes need to be equalized; how should RTAs manage their international trade policies in an outward-looking fashion?

Addressing these issues is one important focus of the international trade research program of the Development Research Group of the World Bank. It has produced a number of methodological innovations in the traditional area of trade effects of RTAs and tackled four new areas of research: the dynamics of regionalism (e.g., convergence, growth, investment, industrial location and migration), deep integration (standards, tax harmonization), regionalism and the rest of the world (including its effects on the multilateral trading system), and certain political economy dimensions of regionalism (e.g., credibility and the use of RTAs as tools of diplomacy).

In addition to thematic work, the program includes a number of studies of specific regional arrangements, conducted in collaboration with the Regional Vice Presidencies of the Bank. Several EU-Mediterranean Association Agreements have been studied and a joint program with the staff of the Latin American and Caribbean Region entitled “**Making the Most of Mercosur**” is under way. Future work is planned on African and Asian regional integration schemes.

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Summary

In a closed economy, a commodity tax drives a wedge between the producer price and the consumer price; in open economies, intercountry differences in commodity taxation can induce at least one of two additional distortions: cross country differences in consumer marginal rates of substitution, which result in an inefficient allocation of world consumption and arise when countries levy taxes on goods and services finally consumed within their borders (destination principle); and cross country differences in producer marginal rates of transformation, which result in an inefficient allocation of world production and arise when countries levy taxes on goods and services produced within their borders (origin principle). Distortions can be avoided by harmonizing tax rates, which would ensure efficiency irrespective of the taxation principle adopted. International neutrality of the tax systems would then be achieved. This constitutes the theoretical rationale for international tax harmonization. At a regional level, harmonization can still be justified since equalities between marginal rates of substitution and marginal rates of transformation, though not applying at the global level, will exist between countries which have a high degree of economic integration and where the removal of barriers to trade and factor movement exposes the allocation of resources more directly to tax rate differentials. However, empirical analyses seem to show that the gains in production and consumption efficiency deriving from regional harmonization processes are not large. Moreover, though reducing international distortions, harmonization could increase the internal ones if the new tax structure is inefficient and does not meet the country's preferences, so that the overall welfare effect might be negative. In other words, tax rate uniformity does not appear the right way of maximizing welfare if integrating countries differ from each other; some degree of flexibility should then be maintained. However, apart from the misallocation of resources, tax rate diversity can induce strategic behavior. In fact, a country's choice of the tax rate can be influenced by the choices of the others: countries can engage in a race to cut down rates in order to attract foreign consumers or producers within their borders, or, if they have market power, to increase taxation on imported goods and decrease it on the exported ones. Externalities thus arise, and precisely the "usurpation of the tax base" in the first case

and the "export of the tax burden" in the second case. Competition between countries would then lead to Nash equilibria of the tax rate setting game corresponding to a welfare level which is inferior to that attainable by cooperation. There is, in fact, some evidence that revenue effects might be large for small countries and that the tax structure has often been used as a protective device. If both harmonization and competition can result in welfare losses, a solution to the problems deriving from diversities in taxation can be that of coordination measures aimed at avoiding the exploitation of other countries by means of taxation. Therefore, in the case of tax base usurpation, cross border movements of resources due to tax rate differentials and the downward spiraling of tax rates due to competition could be mitigated by the imposition of a minimum tax rate; in the case of economies with market power, competition will lead to tax rates which are too low on exportables and too high on importables; since this usually happens through the adoption of either narrow definitions of products for taxation purposes or a tax structure which discriminates according to the quality of the products, a sufficient measure would be that of limiting the possibilities of narrowly defining products for taxation purposes in the first case and harmonization of the *ad valorem* component while leaving different specific components of the commodity tax in the second case.

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Bibliography

I. Introduction

All over the world, countries engage in regional integration. This can take the form of special trade agreements, free trade zones, closer political cooperation, or even unification. One of the driving forces behind this development has been the economic benefit associated with regional integration: liberalizing goods and factor movements, harmonizing technological standards and cooperating on economic policies are generally thought to enhance efficiency and thereby foster economic development and global welfare. One of the questions that has arisen in this context is to what degree fiscal structures – comprising *inter alia* tax bases, tax rates (on which the following analysis will concentrate), and the treatment of international flows of goods and services as well as of capital flows – need to be harmonized to enjoy the full benefits of regional integration. This is the main question underlying this paper.

1. Taxation and distortions

In order to address the question of fiscal harmonization, it is useful to recall some effects of international taxation. In a closed economy, if lump sum instruments are not available, commodity taxation implies a departure from the equality of the marginal rates of substitution and transformation because it drives a wedge between the producer price and the consumer price. This involves a welfare loss and constitutes a distortion. If economies are open, differences in taxation across countries may involve two additional types of distortions, which one can call international distortions.

The first international distortion arises when a tax is levied by a country on all goods and services produced within its borders; this case corresponds to the origin principle in international taxation. Origin-based taxes are essentially production taxes. If countries adopt the origin principle but choose different tax rates, the marginal rates of transformation will differ across countries, which means that world output is not

efficiently produced. The second international distortion arises when a tax is levied by a country on all goods and services consumed within its borders; this case corresponds to the destination principle. Destination based taxes are essentially consumption taxes. If all countries adopt the destination principle but apply different tax rates, marginal rates of substitution will diverge across countries, which means that world consumption is not efficiently allocated. The choice of the taxation principle affects the treatment of trade flows: under the origin principle exports are taxed and imports are tax exempt, and vice-versa under the destination principle.

These concepts will be analyzed in more detail in section II. However, one can already see that uniformity of the tax rates would eliminate the international distortions. Uniformity can be obtained via harmonization, i.e. a concerted equalization of tax structures through formal agreements. Uniformity can, however, also be reached through competition between national fiscal systems. To see this, one must consider the fiscal interdependence existing between countries.

2. Taxation and externalities

For simplicity, consider a world formed by two countries, home and foreign, each maximizing a welfare function over the tax rate. Interdependence arises when the choice of one country affects the welfare of the other. For instance, if the home country imposes a production tax rate lower than that of the foreign country, it could attract production facilities. This might well involve a welfare loss for the foreign country. However, this negative welfare effect for the foreign country is not taken into account by the home country when making its decision. There is therefore a negative externality that makes the (Nash) equilibrium – which the countries would reach by independently maximizing their welfare – inefficient. In fact, both countries would be better off by internalizing the reciprocal spillover effects.

The negative externality is present even if tax competition leads to tax rate uniformity, in the sense that rates are driven down to some common level. This result would eliminate international misallocations as in the case of harmonization, the

difference being in the level of the tax rates, which one can expect to be lower in the case of competition. Even if tax rates are equal, however, countries could improve their situation by maximizing their welfare jointly, or, in other words, by coordinating their policies and reaching a cooperative outcome. The cooperative equilibrium set of tax rates need not involve uniformity if countries have different preferences. In practice, in the case of a negative externality as in the above example, imposing a limit below which countries cannot set their tax rates could suffice as a welfare improving measure.

3. The rest of the world

The above reasoning must be modified when one considers that, in the context of regional integration and tax harmonization, some countries are by definition excluded from the whole process. Then, internalization of spillover effects between union members will still leave externalities to and from the outside countries (the rest of the world).

Against this background, the paper addresses the following questions: Is tax harmonization at the regional level supported by theoretical considerations and what are its empirical effects (section II)? What are the implications of strategic behavior (section III)? Which form of harmonization/coordination does one find in actual experiences (section IV)? Section V draws the conclusions of the analysis, focusing on the costs of harmonization and the measures that constitute an alternative to tax rate uniformity. Some topics that deserve further empirical investigation are also indicated.

II. Tax harmonization and efficiency

This section analyses the distortions in resource allocation arising from international tax rate differentials. The presence of such distortions provides a theoretical justification for uniformity of the tax rates.

1. Distortions under the origin and destination principles

In a closed economy, a commodity tax drives a wedge between the producer price and the consumer price. As outlined in the introduction, in an open economy differences in commodity taxation between countries induce two additional types of distortions: cross country differences in consumer marginal rates of substitution (inefficient allocation of world consumption); and cross country differences in producer marginal rates of transformation (inefficient allocation of world production).

The consumption distortion is caused by taxes that a country levies on goods and services finally consumed within its borders, irrespective of the source of production. This is equivalent to saying that commodities are taxed under the destination principle: the same tax rate applies to imports and domestically produced substitutes, while exports are tax exempt. To discuss the characteristics of the destination principle, consider an individual consuming an identical product supplied by home and foreign producers. If t_d is the tax rate levied according to the destination principle, consumer prices will be $(1+t_d)$ times higher than producer prices. Since free trade in goods and services dictates equalization of after tax prices in each country, producer prices will be equalized across countries, thus entailing an efficient global production. To see this, consider a world formed by two countries, home and foreign (the latter denoted by an asterisk, *). Call p (p^*) the producer price of a tradable good¹. If both countries adopt the destination principle, taxing imports at the same rate (t_d , t_d^*) as domestically produced goods and exempting exports, the after price

¹ In a general equilibrium framework one needs to express prices in terms of an untaxed numeraire. Frenkel, Razin and Sadka (1991) take labour (or capital).

equalization conditions for an individual consuming an identical good supplied at home and abroad at constant costs will be:

$$(1) \quad p(1+t_d) = p^*(1+t_d) \quad (\text{home country})$$

$$(2) \quad p^*(1+t_d^*) = p(1+t_d^*) \quad (\text{foreign country}),$$

which implies $p=p^*$. Since producers are equating this price to the marginal rate of transformation between any two tradable goods, this rate will be the same in all countries and world production efficiency is obtained². On the consumption side, a neutrality result is achieved: within each country consumers are indifferent between purchasing a domestically produced good and purchasing its import substitute. However, if tax rates differ across countries, the relative consumer price (between any two tradable goods) is not equated across countries and the allocation of world consumption is inefficient.

The production distortion arises when taxes are levied by a country on all goods and services produced within its borders, irrespective of their final destination. This is taxation according to the origin principle: a country levies the tax on goods produced within its borders, irrespective of where they will eventually be purchased. Therefore, exports are taxed and imports are exempted. Then, if t_o (t_o^*) is the rate applied to goods produced in the home (foreign) country, free trade will imply

$$(3) \quad p(1+t_o) = p^*(1+t_o^*) \quad (\text{in both countries}).$$

Consumers are maximizing utility by equating the relative consumer price between any two tradable goods to the marginal rate of substitution between them. Then, these marginal rates of substitutions are equated across countries and the allocation of world consumption is efficient. As the destination principle ensures that consumers in each market are indifferent between domestically produced goods and imported goods, the origin principle ensures that producers are indifferent between

² If the price of the tradable good is expressed in terms of labour, world production efficiency is obtained only if one assumes fixed factor supplies.

producing for the home or the foreign market. However, if tax rates differ across countries, the relative producer prices will differ ($t_o \neq t_o^*$ implies $p \neq p^*$) and world production is inefficient.

2. Tax harmonization

The previous section has shown that the destination principle implies that: (i) within each country, consumers are indifferent between buying a domestically produced or imported good (neutrality result from the consumer standpoint); (ii) marginal rates of transformation are equalized across countries (efficiency in global production); (iii) marginal rates of substitution differ across countries (inefficiency in global consumption). The origin principle, instead, implies that: (i') producers are indifferent between local and foreign markets (neutrality result from the producer standpoint); (ii') marginal rates of substitution are equalized across countries (efficiency in global consumption); (iii') marginal rates of transformation differ across countries (inefficiency in global production). The choice between the two principles, therefore, entails the choice between production and consumption inefficiencies.^{3 4 5}

³ As long as the commodity tax is uniform on all goods within a country, production and consumption inefficiencies do not arise as far as tradable goods are concerned. This can be seen considering the consumer price ratio between good x and good y. Under the destination principle, this will be :

$$p_x(1+t_d)/p_y(1+t_d)$$

which is equal to the producer price ratio p_x/p_y . But under the destination principle producer price ratios are equal across countries:

$$p_x/p_y = p_x^*/p_y^*.$$

Then, it must be true that also consumer price ratios are equal in both countries:

$$p_x(1+t_d)/p_y(1+t_d) = p_x/p_y = p_x^*/p_y^* = p_x(1+t_d^*)/p_y(1+t_d^*).$$

Therefore no inefficiency arises. A similar reasoning applies to the origin principle (for this analysis see, for instance, Frenkel, Razin and Sadka, 1991). The way in which this result is usually looked at is that of saying that, if all goods are traded, neither tax principle would produce inefficiencies if a uniform tax rate is applied within each country, even if tax rates differ between countries (see, for instance, Zee, 1995).

⁴ A related question is that of the equivalence of the origin and destination principles. This question arises when one analyses the effect of switching from one principle to the other one. The adoption of the origin principle introduces a wedge between producer prices (which go down by the factor $1/(1+t_o)$, where t is the country's tax rate) and consumer prices (which remain unchanged). The tax does not affect the consumer price, but affects the relative producer price and the composition of production unless the tax rates within a country are uniform (general origin base). Then, if the distribution of tax revenues does not affect demand, the patterns of production, consumption and trade will be the same

The combination of the neutrality results under (i) and (i') and the inefficiency results under (iii) and (iii'), respectively, hinge upon the assumption that consumers cannot cross the border to purchase goods in the country where the after tax price of the commodity is lower and producers cannot move production facilities to the country where the after tax price is higher. Relaxing this assumption destroys the "neutrality" of the destination principle and of the origin principle in the sense that economic decisions will be affected by differences in tax rates between countries. This sheds light on the preference usually given to the destination principle in the international practice. In fact, it is usually believed that cross border mobility of consumers is by far less important than mobility of production facilities. Therefore, if consumers do not move, the application of the destination principle is neutral with respect to consumption decisions between domestic and foreign products and, at the same time, guarantees an optimal global production⁶.

There is, however, a way of avoiding at the same time inefficiency both in production and in consumption and cross border movements of resources from high to low tax countries. This way is tax harmonization, which, by making tax rates across countries uniform, would ensure efficiency irrespective of the taxation

also if the tax rates in the home and in the foreign country differ. Since international prices do not change, the tax reduces the factor income by $1/(1+t)$ - where t may be different in the home and in the foreign country - but since factor supply is supposed to be inelastic the pattern of production is not affected. With the destination principle, consumer prices are multiplied by the factor $(1+t_d)$ and producer prices are unaffected. With flexible exchange rates, the rate of exchange towards the rest of the world will fall by $(1/(1+t))$ so that after the exchange rate adjustment consumer prices are unchanged and producer prices fall by the tax factor: the origin and destination principles are equivalent. This is the well known Tinbergen theory, which rests upon the hypotheses of free trade, absence of transport costs and tariffs, perfectly flexible exchange rates and that the exchange rate is the ratio of the currency values. The theory also abstracts from cross country differences in factor income burdens, which may result from different taxes. If factors move across countries in response to these differentials, production patterns will change and the equivalence result will no longer be obtained.

⁵ A problem for the equivalence result (see note 2) arises when some goods are not taxed, as, for example, in the case of a VAT on consumption but not on investment goods. Then, under the origin principle the producer relative price between consumption and investments goods will be higher in the country with the lower VAT rate so that it will overproduce consumption goods, while the partner will overproduce investment goods (see Sinn, 1990a). Therefore, only with a truly general commodity tax (e.g., a production tax with uniform tax rate if there are no intermediate commodities or a value added tax applied to all goods) the origin and the destination principle are equivalent.

⁶ Note that the destination principle is in line with the GATT provisions.

principle adopted⁷. International neutrality of the tax systems would then be obtained. This constitutes the theoretical rationale for international tax harmonization.

3. Harmonization at the regional level

If harmonization takes place only in the context of a regional integration process, with tax differentials abolished between members of the group (the union), but maintained with the rest of the world, equalities between marginal rates of transformation and marginal rates of substitution will not apply at the global level.

Even if it does not ensure global efficiency, there is still a rationale for harmonization at a regional level, since it provides neutrality within the union. This is particularly important for countries that are increasing their economic integration since the removal of barriers to trade and factor movement exposes resources allocation more directly to tax rate differentials. The deeper trade integration is, the stronger becomes the rationale for tax harmonization; the regional dimension of tax harmonization is thus a consequence of the regional dimension of economic integration.

⁷ The two principles will however differ in the resulting distribution of tax revenues, since exported goods are taxed by the exporting country under the origin principle and by the importing country under the destination principle. Therefore, a positive value of net exports increases the tax base of the exporting country under the origin principle and viceversa. The reverse holds under the destination principle.

Box 1: The restricted origin principle. In the case of regional integration, a further important principle in international taxation is the restricted origin principle. Under this principle, trade within the union is taxed according to the origin principle and trade with the rest of the world according to the destination principle. This system applies among the former Soviet Union Republics (and will apply within the European Union in the future). Shibata (1967) claimed that, under certain conditions, among which the uniformity of the tax rate within each country and factor immobility, different tax rates among member countries would not affect the allocation of resources but result in a transfer of real income between member countries. This can be avoided by the adoption of a common tax rate. These results were questioned by Whalley (1979), who showed that the absence of income transfers is only possible if trade is bilaterally balanced. The difference between these results is due to the fact that Shibata uses a two-commodity model, in which trade is necessarily bilaterally balanced and therefore in the case of equal tax rates no transfer occurs. Berglas (1981) shows that: (i) the restricted origin principle is non distortive only if all countries adopt a uniform tax rate (this is necessary even if trade is bilaterally balanced); (ii) tax rate harmonization is needed to avoid trade deflection; (iii) even if all members adopt the same tax rate, there will be a transfer of real income from union countries that have surpluses in their trade with the rest of the world to union countries which have deficits. These results derive from a more general model: all three country produce three commodities, 1, 2, 3, and the direction of trade, assumed to be unaffected by different tax schemes, is the following: A exports 2 to B and W and imports 1 from B and 3 from W; B exports 1 to A and imports 2 from A and 3 from W; W exports 1 to A, 3 to A and B and imports 2 from A. Flows are not symmetrical (for instance because B is a small country). The international price that the union faces changes only if excess demand changes (which does not happen in our examples). If each country adopts a production tax system based on the origin principle, the tax rate will introduce a wedge between producer (which go down by the factor $1/(1+t)$, where t is the country's tax rate) and consumer prices (which remain unchanged). The tax does not affect the consumer price, but affects the relative producer price and the composition of production unless the tax rates within a country are uniform (general origin base). Then, if the distribution of tax revenues does not affect demand, the patterns of production, consumption and trade will be the same also if the tax rate in A and in B differ.

Since international prices do not change, the tax reduces the factor income by $1/(1+t)$ - where t may be different in A and in B - but since factor supply is supposed to be inelastic the pattern of production is not affected. With the destination principle, consumer prices are multiplied by the factor $(1+t)$ and producer prices are unaffected. With flexible exchange rates, the rate of exchange towards the rest of the world will fall by $(1/(1+t))$ so that after the exchange rate adjustment consumer prices are unchanged and producer prices fall by the tax factor. With the restricted origin principle, consumer prices are multiplied by $(1+t)$, where, in our example, t is the tax rate of country A for all products in country A and the tax rate of country A for product 1 and 2 and of country B for product 3 in country B, while producer prices are consumer prices divided by the factor 1 plus the country's tax rate. Therefore, consumer and producer prices are restored to the original situation only if the tax rates in A and in B are equal. There is also the possibility of trade deflection: if the tax rate in A is lower than in B, it may pay consumers in B to import commodity 3 through A; it may pay producers in A to export commodity 2 through B to get a larger rebate; it may even pay to import commodity 3 through A and re-export it through B. Tax rate harmonization eliminates trade deflections; moreover, producer prices are the same as in the non tax case and consumer prices are multiplied by $(1+t)$. With flexible exchange rates, the price of the rest of W's currency falls by $1/(1+t)$. This implies that consumer prices do not rise. This is the same result as under the general origin principle with a uniform tax rate. The restricted origin tax base transfers real income from union countries that have surpluses in their trade with the rest of the world to those which have deficits. National income is given here by income to factors plus tariff revenues. With the origin principle, with respect to the non tariff case, income to factors is reduced by an amount exactly matched by the increase in government income (under the assumption that this is returned to consumer there is no change). With the restricted origin principle, there is another element, i.e. the taxation of imports and the rebate to exports; moreover, tariff revenues are deflated by $(1+t)$. This means that, if trade with rest of the world does not change, there is a change in income given by minus the tax rate multiplied by the net trade balance evaluated in foreign prices and deflated by $(1+t)$ (or the fall in the exchange rate if flexible). An income transfer is then needed to return to the original position.

Until now the "static" results obtained with tax harmonization have been considered. Another effect stems from the change from different tax rates to uniform tax rates. A detailed analysis of uniform tax rates for a union in the world economy is given in Dosser (1967). For brevity, only the possible effects of regional tax harmonization on production are recalled, since these are often considered to be the most relevant. The framework is that of two countries, A and B, making arrangements for tax harmonization that exclude a third country, W, representing the rest of the world.

a) The destination principle

If the union adopts the destination principle, and that principle was applied previously as well, there is neither trade creation nor trade diversion, since each country is buying the product from the cheapest source (however, changes may come through the consumption side).

b) The origin principle

If the union adopts the origin principle and tax rates are equalized, a common rate is established on trade flows between the member countries and from these to the rest of the world, but this rate can differ from the rate on product flows from the rest of the world to the member countries. One can distinguish three situations:

i) Neither A or B is producing prior to the formation of the union. For instance, A might be a non producer if its tax rate is lower than that in the rest of the world (protection) and the excess of A's costs over W's costs is greater than the difference between W's and A's rates (this is an efficient situation); or A might be a non producer if its tax rate is greater than W's (antiprotection) and either A's costs are larger than W's (efficient situation) or they are smaller but outweighed by the difference in rates (inefficient situation). The same applies to B. After tax harmonization, if the tax rate in A was originally higher than in B and it is assumed

that they harmonize on an average, the tax rate in A decreases. The protection effect increases and the antiprotection one decreases. A might start production. If A is a high cost location relative to W, production due to the enhancing of the protection effect means relocation to the high cost producer; production due to the decrease of the antiprotection effect means relocation to the low or high cost producer according to the two cases above distinguished. As for B, the rise in its tax rate increases the antiprotection and decreases the protection effect of taxation, which implies no production relocation in B.

ii) Either A or B producing. If A was the supplier prior to the harmonization, the same as above applies. If B was the supplier, the equalization of the tax rates might make A become the supplier (relocation to low cost producer). The rise in B's tax rate may divert production to W, which can be either production relocation to the low or high cost producer since the tax rates in B and W differ from each other.

iii) The case of both A and B producing cannot exist here since each country sells at a unique tax inclusive price wherever the product is sold.

If prior to harmonization the destination principle was in force, the least cost producer was supplying all countries. With the formation of the union and the change to the origin principle, the rather unlikely best event that can take place is no relocation of production, i.e. that the least cost supplier is also the least tax country.

4. The effects of harmonization in practice

The theoretical analysis conducted so far has shown that distortions due to international tax differentials are a reason for fiscal harmonization. But what is the importance of these distortions in practice? This is a relevant question since, if these distortions were small, harmonization would not determine a substantial increase in welfare and the rationale for it would fail at the empirical level, though being theoretically clear. An appraisal of the welfare effects of tax harmonization can be found in empirical studies of the European integration process, therefore referring

to a context of destination-based commodity taxation. These analyses, however, do not consider the distortions mentioned above, i.e. the inefficiency in global consumption deriving from the application of different tax rates in different countries under the destination principle. Their focus is, instead, on the impediments to the completion of the "internal market" due to tax differentials, or, in other words, to the disadvantages that goods produced in one member country face when competing with domestic products in the markets of other member countries. From this perspective, tax harmonization can affect welfare through three main channels: the reduction of the costs connected to the existence of frontier formalities; the relocation of production; the realization of scale economies in production. Most of the analyses do not distinguish between the effects of fiscal integration alone and those of economic integration in general. However, in some cases one can single out the fiscal integration effects.

1) Effects of the removal of frontier formalities

How important are tax differentials as trade barriers? In 1988, the European Commission conducted a survey of 2000 firms on the relevance of barriers in the Community market. Entrepreneurs ranked (value added) tax differentials in the fifth place. The four most important barriers were technical standards and regulations, administrative barriers, frontier formalities, and freight transport regulations. Other barriers, less important than VAT differentials, were capital market controls, government procurement restrictions and implementation of Community law (European Commission, 1988). Destination-based value added tax rate differences, as well as differences in excise duties, are however linked to the presence of frontier formalities (ranked third): in fact, entrepreneurs considered them to be one of the main reasons for the existence of customs formalities. Therefore, one can infer the cost of tax rate differentials directly from the costs of customs formalities borne on intra-Community trade. According to estimates of the European Commission (1988), these costs would range from 8.4-9.3 bn ECU for trade in goods, of which 7.9-8.3 bn borne by firms and 0.5-1.0 by public authorities. The cost to firms amounted to 1.6-1.7% of total intra-Community trade and 0.2-0.3% of the Community GDP.

2) Tax differentials and production location

Differences in commodity taxation may distort the location of production. However, this does not really apply to the European Community integration program since the value added tax was already levied according to the destination principle and excise duties were in general paid only in the country of final retail sale.

3) Effects of the realization of scale economies

The destination principle still enables countries to penalize goods generally supplied by foreign firms. This indirect discrimination through the tax structure does not distort location decisions or the pattern of costs competitiveness, but contributes to the segmentation of the internal market and prevents the realization of economies of scale (Devereaux and Pearson, 1990). According to estimates of the European Commission (1988), economies of scale would entail a possible cost reduction ranging from 1 to 63% for industrial plants which, by doubling their size, attain the optimal level. Smith and Venables (1988a and 1988b) estimate welfare gains from the realization of scale economies in the range of 1% to 4% of the value of aggregate consumption before the policy change⁸. However, these gains do not derive from tax harmonization alone, and one cannot evaluate its specific contribution to the integration process⁹.

Harmonization aimed at eliminating indirect discrimination through the tax structure also affects consumption. Pearson and Smith (1990) estimate the effects on household spending in the United Kingdom of the European Commission proposal on

⁸ These results are derived from an assumed reduction in the intra-EC implicit trade barriers such that costs are reduced by 2.5% of the value of intra-EC trade. This figure is supported on the basis of the estimates in Pelkmans, Wallace and Winters (1988), according to which the removal of border measures would generate cost savings of between 1% and 3% of trade.

⁹ Overall, the completion of the internal market should increase welfare by 4.5% to 6.5% of GDP in the medium to long run. This estimate does not consider dynamic effects of the integration process. Tax harmonization can contribute to these, for instance, if the removal of tax barriers induces more credibility and predictability of tax policies for firms and individuals in terms of reduced uncertainty as for the evolution of commodity taxes.

VAT and excise duties harmonization (VAT rates are set within two bands: between 14% and 20% for the standard rate, to be applied to most transactions, and between 4% and 9% for the reduced rate, to be applied to some basic goods and services, such as food, public transport, domestic energy, and books and newspapers. Excise duties on alcoholic drinks, tobacco, and mineral oils are set at uniform levels, reflecting the average of those existing in the member states). For the United Kingdom the proposal meant the introduction of taxation for otherwise zero-rated goods like food, household energy, books and newspapers, children's clothing and a fall in taxation of alcoholic drinks. Changes in household spending in volume terms were estimated to be +39% for alcoholic drinks, -3% for food, -12% for petrol, -5% for fuel. Changes in tax revenues were also considered (e.g., tax receipts from household spending on alcoholic drinks were estimated to fall by £ 1.9 bn). These and other effects made the authors question the wisdom of the harmonization measures. In particular, they proposed a less drastic solution to indirect protection: restrictions to the possibility of employing narrow definitions of goods for tax purposes in order to discriminate between domestic and foreign producers. One can justify this position in terms of the above analysis: harmonization would reduce the international distortion in consumption, but could increase the internal one, if the new tax structure does not meet the country's preferences and the overall welfare effect might be a loss for the member country concerned.

III. Tax harmonization, fiscal interdependence and strategic behavior

The above analysis has not considered that a country's choice of tax rate can be influenced by the choices of its partners. Countries can in fact engage in a race to cut down rates in order to attract foreign consumers or producers within their borders (usurpation of the tax base), the result being that countries adopt less than optimal taxes. This section argues that, although coordination is beneficial, harmonization is not the best way of implementing it.

1. Fiscal interdependence in theory

The previous welfare analysis was based on the assumption that consumers cannot cross borders to purchase cheaper goods in the country that levies a lower (destination based) consumption tax rate and that producers cannot cross borders to locate production facilities in the country with the lower (origin based) production tax. If one relaxes this assumption, the choice of the tax rate made by one country influences the choice of the others. For the sake of brevity and to relate to the analysis of section III, take the case of the European Union proposed clearing house system, which would be substantially equal to a destination-based system without fiscal frontiers. In the absence of tax rate uniformity, the removal of border controls entails problems since non registered tax payers could cross borders to shop in a low tax member country. This means that the high tax member countries lose part of their tax bases, which go to the low tax states. The undercutting countries do not take the negative effect on the partners' revenues into account when deciding their tax rates. This negative externality can push countries to engage in strategic responses lowering tax rates to levels below the desired ones. Competition between member states, then, would not lead to an optimal outcome: the Nash equilibrium of the tax rate setting game would correspond to a welfare level inferior to that attainable if countries behaved in a cooperative way. Therefore there is scope for some form of policy coordination. Before seeing whether this should be harmonization, let us look at the probable magnitude of this negative externality.

2. The importance of externalities in practice

How big could the revenue losses due to cross border shopping be? Cnossen (1990) notes that these could be relevant for the EC member countries, since nearly 15% of their population lives in border areas. However, mobility of consumers is usually considered to be rather low. One distinction should nevertheless be drawn between large and small countries: for the latter, revenue effects from cross border shopping could in principle be relevant. This means that, on the one hand, small

countries could choose to undercut larger neighbors, since the increase in the tax base due to the inflow of foreign consumers can more than compensate for the decrease in the rate, thus leading to higher revenues. In fact, in 1990 Luxembourg levied VAT at a standard rate of 12%, undercutting the neighboring Belgium (19%), France (18,6%), and Germany (14%) (Cnossen, 1990)¹⁰. On the other hand, small countries might find it difficult to impose higher rates than their neighbors when wishing to do so. One example is that of Ireland (see Box 2), where cross border shopping to the United Kingdom seems to have been a phenomenon of some significance and the evolution of commodity taxation appears in line with the theoretical considerations on fiscal interdependence.

¹⁰ For a model of tax competition with the small country undercutting the larger one see Kanbur and Keen (1993).

Box 2: Commodity taxation and cross border shopping in Ireland. Commodity taxation in Ireland tends to have been above the OECD and EC average; moreover, it has been higher than in the neighboring United Kingdom (Northern Ireland). For instance, in 1988 taxes on goods and services as a percentage of GDP amounted to 18.5% in Ireland and 8% in the United Kingdom, in 1990 to 21.6% and 8.0% respectively. By 1990, the number of statutory VAT tax rates had been cut to three and the standard rate reduced from 25% to 23% and then to 21% in 1991, against a 17.5% rate in the United Kingdom. The Irish rate was still about 4 percentage points above the EC average (in practice, exemptions made the pattern of effective tax rates on consumption rather differentiated). The following tables illustrate the evolution of indirect taxation.

Table A: VAT statutory tax rates

	<i>Pre 1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>EC average</i>
Standard rate	25	25	23	21	17
Tourism	10	10	10	10/12.5	..
Electricity	5	5	10	12.5	..
Food	0	0	0	0	..

Source: OECD (1991-1995).

Table B: VAT and excise revenues (in percent of GNP)

<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>1994</i>
19.1	16.8	15.0	14.5

Source: OECD (1991-1995) and author's calculations.

Table C: VAT and excise revenues as percentage of total revenues

	<i>1983</i>	<i>1984</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>
VAT revenues/total rev.	.191	.196	.188	.194	.188	.201	.212	.200	.192	.194
Excises revenues/total rev.	.110	.101	.101	.095	.089	.083	.091	.086	.086	.083

Source: IMF (1995) and author's calculations.

These developments are connected to the European integration process. In this respect, a simulation of the effects of the European Commission 1987 proposal on Irish tax revenues estimates a loss in terms of GDP of 3% (Bovenberg and Horne, 1992). As for the magnitude of cross border shopping, Fitzgerald, Quinn and Williams (1988) find evidence of a relevant volume of it from the Republic of Ireland to Northern Ireland for TV sets, spirits and petrol (apart from the differences in VAT rates, on March 1st, 1987 the excise tax for a TV set amounted to Irish pounds 49.00 in Ireland and was zero in the United Kingdom; for spirits, to Irish pounds 19.522 per Liter in Ireland and Irish pounds 17.14 in the United Kingdom; for petrol, to Irish pounds 27.37 per Hectoliter in Ireland and Irish pounds 21.07 in the United Kingdom). Their results also indicate that the cut in the tax rates on TV sets and spirits undertaken by Ireland in 1984 resulted in a substantial increase in the volume of domestic sales, offsetting the revenue losses due to the lower tax rates (see also Table C).

Summing up, there is fiscal interdependence between the choices of the tax rates undertaken by the member states; this takes the form of a negative impact of the decrease in the tax rate of a country on the revenue level of the other(s). This externality prevents the competitive process of setting the tax rate to reach an optimal equilibrium. Tax harmonization would stop strategic games: countries could cooperatively choose a common tax rate above the one obtained in the case of competition. However, since what one seeks to avoid is a downward spiraling of tax rates, harmonization is not necessary. What is needed is the setting of a minimum tax rate. A maximum tax rate is not necessary either, since the country which chooses a high rate is imposing costs to itself only (in terms of a revenue loss), while the one which is undercutting is imposing a cost onto the other members.

3. Market power and tax burden export

Usurpation of the tax base is not the only kind of externality arising in the context of international taxation¹¹. As already mentioned, if economies have market

¹¹ For the analysis of this section see Rose (1987). Gordon (1993) presents a formal treatment of the various types of externalities arising from decentralized decisions in a federal context. This section

power, they can export the tax burden. This happens if taxing imports from and exports to another country results in reduced net prices to the other country producers or increased prices to its consumers (Musgrave, 1983). The feasibility of tax burden export depends upon the elasticities of demand and supply of traded goods or, in other terms, on the possibility of affecting world prices. It will therefore be less feasible for small countries. If the destination principle applies (and therefore taxes are consumer taxes), an improvement in the terms of trade and thus in welfare of one member country can be obtained by subsidizing the domestic consumption of exportable goods and taxing the domestic consumption of importable goods. If the country is large with respect to its trading partners, the latter must accept the rise in import prices in the first case and the decline in supply prices in the second case¹².

Exploitation of the partners creates scope for strategic reactions: for instance, the exporting country will exploit its monopoly power by lowering the tax on (or subsidizing) the exported good, and the importing country will exploit its monopsony power by raising the tax rate on it. Coordination would imply higher (lower) tax rates on goods exported to (imported from) other member countries. In a regional integration context, however, one must also consider the case of goods traded both with the other member countries and with the rest of the world. If one country tries to improve its welfare at the expense of its trading partners, it will have to take into account the price elasticities of all of them. Coordinated maximization of the union welfare means that only the elasticity of demand in the rest of the world must be taken into account. This is because it is possible to compensate undesirable price effects by choosing appropriate national tax parameters. Thus, if the price elasticity for the

considers the strategic implications of the phenomenon already analysed in section II.4 from the perspective of the market segmentation effect.

¹² Generally speaking, if under the destination principle (consumption tax) the home country taxes importables more than exportables, the consumer relative price of the former will increase. Demand for importables (exportables) will fall (rise); an excess demand (supply) for exportables (importables) will arise in the world markets. As a consequence, producer prices will rise for exportables and fall for importables and the home country terms of trade will improve (the terms of trade are defined with respect to producer prices under the destination principle). Under the origin principle (production tax), if the home country taxes exportables more than importables, production will be shifted away from exportables to importables. An excess demand for exportables will arise and the consumer price of exportables will increase. This improves the home country terms of trade (defined with respect to consumer prices under the origin principle).

exported good is relatively high in the union countries and relatively low in the rest of the world, the producer price will be kept lower in the case of autonomous welfare maximization than in the coordinated case. This means that taxes on exported commodities would be lower in the coordination case (and conversely for imported commodities). Of course, it also means that the union can better exploit the rest of the world.

The European experience has several examples of the use of the tax structure as a non tariff protective device. Kay and Keen (1987) consider the case of alcohol and tobacco taxes. In the case of alcoholic drinks, the level of taxation in the EC member states was clearly affected by whether the country was an importer or exporter of wine, beer or spirits. In the case of cigarettes, the choice between specific and *ad valorem* taxation depended on whether the country was a supplier of high or low cost tobacco. Another example is that of taxes on the purchase of cars: just to take an example, in 1985 Italy, which specialized in the production of small engine cars, taxed small engine cars at a 18% VAT rate, while the rate rose to 38% for cars with engine capacity over 2000 cc.

IV. Practical issues in regional tax harmonization

This section analyses the choice of the taxation principle in connection to the kind of union that integrating countries are forming and reviews some experiences of tax harmonization. In practice, the choice among the destination and the origin principle seems to be guided by the kind of agreements that the countries stipulate. If they are forming a customs union, the destination principle is usually preferred; if they are forming an economic union, the origin principle is proposed.

1. Customs union and the destination principle

Countries forming a customs union are usually concerned with avoiding fiscal discrimination that causes differences in competitiveness; moreover, fiscal autonomy is to be preserved. These requirements lead to the application of the destination principle in taxation, i.e. foreign sales are tax exempt and all domestically paid taxes are reimbursed with taxation taking place in the importing country, including taxes on the last exchange and a compensation corresponding to the various taxes that a similar product of the importing country would have paid in the preceding phases. This system guarantees the uniformity of taxation for consumers of the same national market.

Customs unions abolish the economic borders but not the fiscal ones; the latter operate as an equalisation instrument aimed at eliminating distortions due to the tax factor. In order to achieve this, however, the destination principle must undergo two limitations.

a) The first limitation concerns indirect taxation. Taxation in the destination country assumes the existence of rebates which are normally calculated for large averages (either because the importance of the taxed good can differ from product to product or because the productive process can take place in one firm or in more firms giving rise to a series of taxable exchanges). This causes a difference between the tax value that is effectively included in the price and the computed one, in which case hidden export subsidies and protective tariffs arise. Therefore, there is no guarantee that taxes are completely neutral with respect to international trade. The value added tax was chosen by the member countries of the European Community to ensure as much as possible neutrality and uniformity of the tax burden (for a discussion of the characteristics of the VAT see Tait, 1988)¹³.

¹³ It is sometimes argued that a single stage tax on the last producer or in any successive exchange phase would be easier to administer for developing countries. However, the introduction of the VAT in developing countries (Korea, Mexico, Turkey, Colombia, Indonesia, Malawi) was in most cases a success in terms of coverage, revenue and simplicity relative to the existing systems (Newberry and Stern, 1987). These normally involved cascading, which made it difficult to assess the tax content of exports or the amount of tax to impose on imports. Cnossen (1991), however, points out that: 1) in

b) The second limitation of the destination principle concerns direct taxation, in particular direct corporate taxes. This issue arose in the 60's, when France and Germany disagreed on the choice of the principle of taxation of trade flows. France had high indirect taxes and low direct taxes relative to Germany. France was therefore in favor of the destination principle with border adjustments. Germany, on the contrary, favored the origin principle, arguing that low indirect taxes were compensated by high direct taxes. Therefore, it would have been unfair to burden German exports to France with both German high direct taxes and with French high indirect taxes. Along the same line of reasoning, it has often been argued that developing countries have an advantage over developed ones, since the prices of their products incorporate a higher weight of reimbursable indirect taxes relatively to the non reimbursable direct taxes¹⁴. One cannot, however, speak of a distortion, since the economic structure and the tax structure are strictly connected.¹⁵ Moreover, the computation of the incidence of the income and wealth taxes on the sale price is practically impossible since the same production volume is compatible with very different levels of taxable income. In any case, the shifting onto the price of direct taxes on firm and corporation income is not as relevant as that of indirect taxes. In a competitive market, in fact, direct corporate taxes would not be shifted forward and therefore would not affect neutrality¹⁶. Sinn (1990b) offers some counterexamples.

spite of the fact that rate differentials should be kept to a minimum to ensure neutrality, administrative capacity may be limited in developing countries, so that other instruments are not available to assist the poor, which makes a case for a more favorable treatment of essential consumer items, e.g. food; 2) VAT can be administered at most levels of economic development, but, as a broadly based transaction tax, it is less than ideal for economies with a narrow manufacturing base and that heavily depend on cross border trade since: a) VAT implementation requires tax payers willing to maintain some basic accounts and voluntary compliance; b) the administrative feasibility can be jeopardized by the existence of an extended, highly rate differentiated, protectionist set of excises.

¹⁴ However, also European countries have usually had high levels of indirect taxes.

¹⁵ In fact, the bulk of revenue of developing countries comes from: domestic taxes on goods and services (5% of GDP and 30% of revenues); foreign trade taxes, which are mainly import duties (5% of GDP); income taxes, mainly from corporation tax (6% of GDP). The structure of revenue of developed countries is instead: 36% of revenues from income taxes, mainly on individuals; 9% from domestic taxes on goods and services; 9% from social security contributions (Burgess and Stern, 1993).

¹⁶ The tax must be non distortive, i.e. it should hit the quasi-rent and not affect the cost of capital. The theory is based on the hypothesis that the marginal firm obtains zero profit and is therefore not hit by the tax. This implies that the number of firms does not change because of the tax, the quantity produced does not change either and therefore there is no tax shifting. If, instead, the marginal firm is the one

2. Economic unions and the origin principle

As for the choice of the origin principle in the case of the formation of an economic union, the question is a point of principle: in order to obtain a common market, tariff abolition does not suffice; it is necessary to abolish all forms of control, since these always constitute an incentive for introducing distortions. In the presence of market power, however, under the origin principle products and incomes are transferred abroad with the tax burden they incorporate (an increase in price in the case of indirect taxation or a cut in income in that of direct taxation). This creates a distortion of competition. Fiscal borders should then be abolished, it is argued, only if divergences in taxation are not very relevant.

However, also the destination principle can be made compatible with the removal of border controls since border tax adjustments can be shifted to books of account. There is then the alternative method presented by the experience of existing federal states: the US states and the Canadian provinces, to take two examples, apply retail taxes and adopt different rates, ranging from the zero rate of Alaska, Delaware, Montana, New Hampshire and Oregon to the 6.5% of Minnesota, Nevada and Washington in 1991; and from the zero rate of Alberta to the 12% of Newfoundland in 1989 in Canada (see Rounds, 1992).

3. Experiences of tax harmonization

Attempts of tax harmonization have been made in the context of established economic integration at a regional level (CACM in 1958, LAFTA in 1961, CAEU in 1961, UDEAC in 1964, ASIA in 1964, CARICOM in 1973, ECOWAS in 1975, EC in 1975, LAIA in 1980 and recently NAFTA). Art. 1 of the treaty establishing the Mercusor (1991) considers the coordination of fiscal policy. It has been argued (Abreu Bonilla, 1991) that this means the abolishment of fiscal borders and fiscal harmonization to avoid distortions; adoption of a VAT is suggested.

which obtains a minimum profit and exits the market once this is hit and reduced by the tax, the theory does not hold.

The EC (now EU) is the only agency that has proposed rules on VAT and excise rate harmonization. Most of the countries in LAIA and in the Andean Pact have adopted VAT, but are still behind the EU harmonization process. However, Tait (1988) argues that the VAT will become the harmonized form of sales taxation in the region. Some stages of the EU harmonization process are illustrated in Box 3.

Box 3: The harmonization process in the EU. The original designers of the EC wanted to overcome the border adjustments linked to the destination principle and considered a future possibility of levying the VAT according to the origin principle (EC Commission, 1963). Then, without identical rates, liabilities would be transferred across borders. A standard rate was suggested, together with a low and a high rate of VAT and a narrowing of the differential between rates - no more than 2.5 percentage range (EC, 1987a). After that, the Commission proposed only two rates, a standard rate between 14% and 20% and a reduced one between 4% and 9% (for food, energy, water, pharmaceuticals, books, newspapers, passenger transport). It was recommended that states fixed rates in the lower half of the band for the reduced rates (in 1989 the Commission proposed that the standard rate should be subject only to the minimum rate of 14%). Under a subsequent proposal, sales among Community members should be treated as those within national borders and frontiers controls should be removed. Exporting firms would no longer obtain a tax rebate and importing firms could reclaim the foreign VAT incorporated in the price of the imported good from the exporting country revenue office and pay the home VAT. Each member state should calculate its total VAT sales and purchases for the month by aggregating all VAT charged and claimed by registered traders. The net position should be calculated with respect to the EC as a whole. A clearing house would net out the national claims (EC, 1987b). The system is simple, but can give rise to problems because of the doubts on the accuracy of the claims involved in so large flows of money. On January 1st, 1993, the Directive 91/680 went into force. It provides for a transitional period in which the VAT is still based on the destination principle, but the monitoring is to be carried out not through physical controls at the border, but on the basis of a new reporting system of statistics.

The European integration process has been therefore characterized by proposals on trade flows taxation which do not necessarily foresee tax rate uniformity. An empirical appraisal of these proposals is in Fehr, Rosenberg and Wiegard (1995). On the assumption that member countries can exercise market power, these authors distinguish between international substitution effects and international income effects of commodity taxation. International substitution effects (efficiency effects) arise when taxation acts as a second best substitute for tariffs, since the home country can influence the terms of trade in its favor by taxing more heavily importables goods under the destination principle and exportables goods under the origin principle. International income effects correspond to net tax exports. Net tax exports arise when the tax revenue accrues to the home country whereas the tax burden is partially shifted to the foreign country residents; tax exporting is therefore equivalent to a transfer from the foreign to the home country. Tables 1 and 2 show the results of simulations of the impact on welfare of VAT reform in the European Union. Table 1 refers to the case of the Union moving to a clearing house system (because of the clearing mechanism, net tax exports are absent). Table 2 refers to the effects of the implementation of the transitional system.

Table 1: Welfare and revenue effects of the clearing system

<i>Country</i>	<i>Welfare (mill. ECU)</i>	<i>Welfare (% of VAT r.)</i>	<i>Vat revenues (% of Vat r.)</i>
France	-307	-0.60	-0.97
Belgium-Luxembourg	-22	-0.28	-0.43
Netherlands	-42	-0.36	-0.76
Germany	121	0.28	1.52
Italy	9	0.04	0.83
United Kingdom-Ireland	187	0.65	1.16
Denmark	-106	-1.47	-1.82
EU	-160		
Rest of the world	-4		

Source: Fehr, Rosenberg and Wiegard (1995).

The results show an increase in welfare for low tax countries and a decrease for high tax ones. This is because under the clearing house system consumers pay the foreign tax when purchasing imported goods, but the revenues accrue to their home country (a similar explanation applies to the effects of the transitional system). Note that welfare decreases for the EC as a whole. This is a consequence of the increase in the tax rate spread after the removal of border tax adjustments.

Table 2: Welfare and revenue effects of the transitional system (in % of VAT revenues)

Country	Subst. eff.	Net tax exp.	VAT revenues
France	-0.17	-2.03	-2.65
Belgium-Luxembourg	-0.06	1.91	1.66
Netherlands	-0.19	-5.19	-7.10
Germany	0.08	2.02	2.40
Italy	0.04	1.23	1.66
United Kingdom-Ireland	0.39	1.56	2.30
Denmark	-0.30	-1.71	-3.14

Source: Fehr, Rosenberg and Wiegard (1995).

These results show that efficiency losses or gains for the single countries are very small and are dominated by international redistribution effects¹⁷.

V. Conclusions

This section considers the costs of tax harmonization and discusses alternative fiscal coordination measures; it also stresses the need for further empirical research.

¹⁷ Bovenberg and Horne (1992) analyze various estimates of the revenue effects of the Commission's 1987 proposal for the approximation of VAT rates (see section V, Box 2) and excise rates (a set of uniform excise rates, near the arithmetic mean of existing rates, was proposed; in 1989 the Commission proposed that for alcoholic beverages and tobacco only minimum rates should be imposed). See also Tait (1988) for an estimate of the revenue effect of the clearing house mechanism.

1. The cost of harmonization

As mentioned in the introduction, in open economies taxation involves both an internal and an international distortion. Tax harmonization eliminates the international misallocation due to rate differentials, but may cause distortions within one or all countries that could outweigh the international efficiency gain. The risk that tax harmonization does not improve overall efficiency arises when taxes are harmonized around an inefficient system. Choosing the "right" system is all the more difficult since it is not easy to measure the excess burden of taxation (Tanzi and Bovenberg, 1990).

Moreover, even if one could know the efficient tax system, this is not necessarily the same for all countries. In general terms, taxation is used to finance public expenditure and different countries might well have different public expenditure needs and different available instruments to finance them. For instance, there might be different preferences for public goods across countries; or the mix of the private and public sectors can be different¹⁸.

Moreover, even if the amount of revenue to be raised is the same, the available taxes can be different. For instance, some countries find it easier to raise revenues by indirect rather than direct taxation¹⁹. A theoretical support to the

¹⁸ This can be particularly true if the integrating countries are at a different level of economic development. For instance, developed countries might be more concerned with equity and neutrality, developing countries with tax revenues and capital flows (See Faria, 1995). Moreover, in developed countries government spends more as a percentage of GDP - 31,5% against 25,5% of developing countries - and mostly on social security benefits and health, while developing countries spend mainly for economic services, general public services, defense and education. However, it has been noted that developing countries with high public intervention often deliver very poor level of infrastructures (Krueger, 1993). On the other hand, there can be cases of relatively large but efficient public sectors (an example usually referred to for developed economies is that of Sweden), where a higher level of taxation can thus be justified.

¹⁹ In fact, the bulk of revenues of developing countries comes from: domestic taxes on goods and services (5% of GDP and 30% of revenues); foreign trade taxes, which are mainly import duties (5% of GDP); income taxes, mainly from corporation tax (6% of GDP). The structure of revenues of developed countries is instead: 36% of revenues from income taxes, mainly on individuals; 9% from

argument for different tax rates in different countries comes from the optimal taxation literature: Wiegard (1980) and Rose (1987) present models in which *international* tax coordination aimed at minimizing distortions (both domestic and international) does not yield tax rate uniformity if the countries' characteristics and, therefore, the parameters in the governments' maximization problem differ.

Similar arguments apply if one considers taxes on specific goods. Kay and Keen (1982) study the structure of cigarette taxes in the EC, in particular the balance between *ad valorem* and specific elements. If the tobacco industry were characterised by conditions of perfect competition, there would be no economic reasons for an *ad valorem* tax. In fact, specific and *ad valorem* taxation differ in their effects only because there is a range of tobacco products differing in quality, packaging, brand image, etc. The price of the product reflects all these aspects: the larger the number of products, the higher the price, because of the costs of branding, advertising, etc. *Ad valorem* taxation induces a reduction in the level and range of all these elements, which constitutes a welfare loss for consumers, who have a more limited choice. Specific taxation would be preferable since it would achieve the same revenue level without this distortion. But the tobacco industry is characterised by an oligopolistic structure. On the assumption that this results in a too large degree of product differentiation with respect to the optimal one, *ad valorem* taxation has a corrective role: it discourages competition through brand differentiation. This is the objective to be reached through *ad valorem* taxation. Other objectives (revenue, health, etc.) should be left to (the more efficient) specific taxation. What are the implications of this analysis for tax harmonization? As for the specific component of taxation, different countries may have different objectives and therefore the possibility of imposing different rates should be granted. As for the *ad valorem* component, there is a rationale for harmonizing the rates if the structures of competition and product range should be the same in all countries.

There are also other drawbacks of tax harmonization. First, harmonization *de jure* does not imply harmonization in practice if countries differ in their effective

domestic taxes on goods and services; 9% from social security contributions (Burgess and Stern, 1993).

enforcement of tax laws. Second, harmonization must also consider the benefits from government expenditure to economic agents, since, for example, subsidies can change the actual effect of taxation. Only if the value of the benefits of government expenditure is the same across countries will uniform tax rates ensure neutrality.

Therefore, tax rate uniformity does not appear to be the way of maximizing welfare if integrating countries differ from each other. Some degree of flexibility should be maintained. However, the preceding sections have shown that also tax diversity has a price in terms of resource misallocation and of strategic behavior leading to a downward spiraling of tax rates. A way out of this contrast can be found considering that what eventually matters in an integration process is that countries should not improve their welfare at the expense of their partners by means of taxation. Thus, national tax systems should be coordinated to reduce exploitation of other member countries. Therefore, a complete harmonization of commodity taxes does not seem necessary. Which are then coordination measures alternative to uniformity?

2. Alternative policy measures

Tax rate differences might not survive competition. As mentioned above, this would lead to Nash equilibria characterized by tax rates which differ from the optimal ones because of the presence of externalities. In the case of the application of the destination principle and in the absence of market power, competition would work through cross-border shopping, which pushes countries to undercut their neighbours' tax rates. An efficiency improving coordination measure would then be the imposition of a minimum tax rate.

If economies have market power, competition leads to tax rates which are too low on exportables and too high on importables. As described above, this can happen through the adoption of narrow definitions of products for taxation purposes, in such a way that goods which are mainly imported fall in a category which bears a higher tax (and viceversa for goods which are mainly exported). Alternatively, the tax

structure can discriminate according to the quality of the products. Even though uniformity of the tax rates across countries and products would eliminate this form of indirect protection, an alternative, sufficient measure would be that of limiting the possibility of narrowly defining products for tax purposes in the first case and harmonization of the *ad valorem* rates while leaving different specific components of the tax in the second case.

These measures would reduce or eliminate the use of tax differences as a means of exploiting the partners, while at the same time guaranteeing the degree of flexibility necessary to respect each country's own objectives.

3. Topics for further research

Finally, one should note that much work is still needed at the empirical level to appraise the effects of regional tax harmonization/coordination, and in particular to assess:

1) The empirical relevance of global consumption distortions under the destination principle. In fact, the existing studies on the distortions caused by taxation differences concentrate on the obstacles to the creation of a single market from the perspective of the relative position of foreign and domestic producers. One should instead also try to evaluate the positive welfare change deriving from the reduction or elimination of the international distortion and compare it with the change in the internal distortion due to the change in the tax structure (if prior to harmonization the country was implementing the "optimal" tax system, this change will involve a welfare loss).

2) The relevance of distortions and externalities due to tax rate differentials. For instance, one could look at the evolution of commodity tax rates in countries undergoing trade liberalization with each other and see whether, in the lack of harmonization, they show a (downward) trend which is significantly different from that observable in countries that are not undergoing an integration process.

3) The effects of regional harmonization on the rest of the world. Among these, one could, for instance, analyze terms of trade effects. These depend on how harmonization affects the demand for importables relative to that for exportables in the member countries. Would the decrease of rates on goods mainly imported from the rest of the world increase the demand for them and therefore improve the rest of the world terms of trade? Some evidence could be found from the case of the EC removing higher VAT rates for luxury goods or harmonizing excise rates on tobacco, to a large extent imported from extra-Community countries. Other questions deserves further empirical study. For instance, to what extent would the removal of border controls for trade among the integrating countries and their retention for that with the rest of the world divert trade away from outside countries (and possibly make foreign producers move production facilities into the integrating region)?

Bibliography

- Abreu Bonilla, S. (1991); *Mercusor e integracion*, Montevideo.
- Berglas, E. (1981); "Harmonization of commodity taxes", in: *Journal of Public Economics*, 16: 377-387.
- Bovenberg, A.L. and J.P. Horne (1992); "Taxes on commodities: a survey", in: G. Kopits (ed.), *Tax harmonization in the European Community*, IMF, Washington D.C.
- Burgess, R. and N. Stern (1993); "Taxation and development", in: *Journal of Economic Literature*, 31: 762-830.
- Cnossen, S. (1989); *On the direction of harmonization in the European Community*, mimeo.
- Cnossen, S. (1990); "The case for tax diversity in the European Community", in: *European Economic Review*, 34: 471-479.
- Cnossen, S. (1991); "Design of the value added tax: lessons from experience", in: J. Khalizadeh-Shirazi and A. Shah (eds.), *Tax policy in developing countries*, World Bank, Washington D.C.
- Deaton, A.S. and N.H. Stern (1986); "Optimally uniform commodity taxes, taste differences and lump-sum grants", in: *Economic Letters*, 20: 263-266.
- Devereaux, M. and M. Pearson (1990); "Harmonizing corporate tax in Europe", in: *Fiscal studies*, 11: 21-35.
- Dosser, D. (1967); "Economic analysis of tax harmonization", in: C. Shoup (ed.), *Fiscal harmonization in common markets*, New York-London.
- European Commission (1963); *The EEC reports on tax harmonization: the report of the Fiscal and Financial Committee*, EC, Brussels.
- European Commission (1988); "The economics of 1992: an assessment of the potential economic effects of completing the internal market in the European Community", in: *European Economy*, EC, Brussels.
- European Community (1987a); *Report on behalf of the Committee on Economic and Monetary Affairs and Industrial Policy on the removal of tax barriers within the European Community*, EC, Brussels.
- European Community (1987b); *Completing the internal market: the introduction of a VAT clearing mechanism for intra-Community sales*, EC, Brussels.
- Faria, A.G.A. (1995); "Tax coordination and harmonization", in: P. Shome (ed.), *Tax policy handbook*, IMF, Washington D.C.
- Fehr, H., C. Rosenberg and W. Wiegard (1995); *Welfare effects of value added tax harmonization in Europe*, Springer, Berlin-New York.

- Fitzgerald, J.D., T.P. Quinn, B.J. Whelan and J.A. Williams (1988); *An analysis of cross-border shopping*, Economic and Social Research Institute, Dublin.
- Frenkel, J.A., A. Razin and E. Sadka (1991); *International taxation in an integrated world*, MIT Press, Cambridge (Mass.).
- Gordon, R.H. (1983); "An optimal taxation approach to fiscal federalism", in: *Quarterly Journal of Economics*, 95: 567-586.
- International Monetary Fund (1995); *Government Finance Statistics Yearbook*, IMF, Washington D.C.
- Kay, J. and M. Keen (1982); *The structure of tobacco taxes in the European Community*, IFS Report Series No. 1, Institute for Fiscal Studies, London.
- Kay, J. and M. Keen (1987); "Alcohol and tobacco taxes: criteria for harmonization", in: S. Cnossen (ed.), *Tax coordination in the European Community*, Kluwer, Deventer-Boston.
- Kanbur, R. and M. Keen (1993); "Jeux sans fronti res: tax competition and tax coordination when countries differ in size", in: *American Economic Review*, 83: 877-892.
- Krueger, A.O. (1993); *Political economy of policy reform in developing countries*, MIT Press, Cambridge (Mass.).
- Musgrave, R.A. (1983); "Who should tax, where and what", in: C.E. McLure (ed.), *Tax assignment in federal countries*, Centre for Research on Federal Financial Relations, Canberra.
- Newberry, D. and N. Stern (1987); *The theory of taxation for developing countries*, World Bank, Washington, D.C.
- OECD (1991-1995); *OECD Economic Surveys: Ireland*, OECD, Paris.
- Pearson, M. and S. Smith (1988); "1992: Issues in indirect taxation", in: *Fiscal Studies*, 9: 25-35.
- Pelkmans, J., H. Wallace and L.A. Winters (1988); *The European domestic market*, Chatam House, London.
- Rose, M. (1987); "Optimal tax perspective on tax coordination", in: S. Cnossen (ed.), *Tax coordination in the European Community*, Kluwer, Deventer-Boston.
- Rounds, T.A. (1992); "Tax harmonization and tax competition: contrasting views and policy issues in three federal countries", in: *Publius: The Journal of federalism*, 22: 91-120.
- Shibata, H. (1967); "The theory of economic unions: a comparative analysis of customs unions, free trade areas and tax unions", in: C. Shoup, *Fiscal harmonization in common markets*, New York-London.
- Shome, P. (1995); *Tax policy handbook*, IMF, Washington, D.C.
- Shoup, C. (1967); *Fiscal harmonization in common markets*, New York-London.

- Sinn, H.-W. (1990a); "Tax harmonization and tax competition in Europe", in: *European Economic Review*, 34: 489-504.
- Sinn, H.-W. (1990b); "Can direct and indirect taxes be added for international comparisons of competitiveness?", in: H. Siebert (ed.), *Reforming capital income taxation*, Mohr, Tuebingen.
- Smith, A. and A. Venables (1988a); *Completing the internal market in the European Community: some industry simulations*, CEPR Discussion Paper nr. 233.
- Smith, A. and A. Venables (1988b); *The costs of non-Europe. An assessment based on a formal model of imperfect competition and economies of scale*, IFS Economic Papers No. 70, Institute for Fiscal Studies, London.
- Tait, A. A.(1988); *Value added tax*, IMF, Washington D.C.
- Tanzi, V. and L. Bovenberg (1990); *Is there a need for harmonizing capital income within EC countries?*, Working paper 90/17, IMF, Washington D.C.
- Whalley, J. (1979); "Uniform domestic tax rates, trade distortions and economic integration", in *Journal of Public Economics*, 11: 213-221.
- Wiegard, W.W. (1980); "Distortionary taxation in a federal economy" in: *Zeitschrift fuer Nationaloekonomie*, 40: 183-206.
- Zee, H.H. (1995); "Value added tax", in: P. Shome (ed), *Tax policy handbook*, IMF, Washington D.C.

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